

What is claimed is:

1. A semiconductor device comprising:
a Schottky layer; and
a Schottky electrode that is formed on the Schottky layer and
5 has a Schottky contact with the Schottky layer,
wherein the Schottky layer is composed of a compound
semiconductor including In and P, and
the portion of the Schottky electrode that touches the
Schottky layer is composed of material whose main constituents are
10 La and B.
2. The semiconductor device according to Claim 1,
wherein the Schottky layer is composed of one of InGaP, InP
and InAlGaP.
- 15 3. The semiconductor device according to Claim 2,
wherein the portion of the Schottky electrode that touches
the Schottky layer is composed of LaB₆.
- 20 4. The semiconductor device according to Claim 3,
wherein the semiconductor device is a transistor or a diode.
5. The semiconductor device according to Claim 1,
wherein the portion of the Schottky electrode that touches
25 the Schottky layer is composed of LaB₆.
6. The semiconductor device according to Claim 1,
wherein the semiconductor device is a transistor or a diode.
- 30 7. A method of manufacturing a semiconductor device that has
(i) an epitaxial layer that comprises a semiconductor layer and a
Schottky layer and (ii) a Schottky electrode that is formed on the

Schottky layer and has a Schottky contact with the Schottky layer, the manufacturing method including:

an epitaxial process of forming an epitaxial layer by forming in sequence a semiconductor layer and a Schottky layer that is
5 composed of a compound semiconductor including In and P on a semi-insulating substrate by epitaxial growth using one of Metal Organic Chemical Vapor Deposition method and Molecular-Beam Epitaxial method; and

an electrode forming process of forming a Schottky electrode
10 by evaporating material whose main constituents are La and B onto the Schottky layer,

wherein the portion of the Schottky electrode that touches the Schottky layer is composed of the material.

15 8. The method of manufacturing the semiconductor device according to Claim 7,

wherein the Schottky layer is composed of one of InGaP, InP and InAlGaP, and

the Schottky layer is formed in the epitaxial process, the
20 Schottky layer being composed of one of InGaP, InP and InAlGaP.

9. The method of manufacturing the semiconductor device according to Claim 8,

wherein the portion of the Schottky electrode that touches
25 the Schottky layer is composed of LaB₆, and

LaB₆ is evaporated onto the Schottky layer in the electrode forming process.

10. The method of manufacturing the semiconductor device
30 according to Claim 9,

wherein the vapor deposition of the material is performed with an electron-beam vapor deposition method.

11. The method of manufacturing the semiconductor device according to Claim 7,

wherein the portion of the Schottky electrode that touches
5 the Schottky layer is composed of LaB_6 , and

LaB_6 is evaporated onto the Schottky layer in the electrode forming process.

12. The method of manufacturing the semiconductor device
10 according to Claim 7,

wherein the vapor deposition of the material is performed with an electron-beam vapor deposition method.